[0037] **FIG. 2** is a schematic diagram depicting an exemplary screen of the display device **120** corresponding to the directional input system **100** of **FIG. 1**. The screen includes an on-screen keyboard **130** and a text display area **210**. As mentioned above, the on-screen keyboard **130** is optional because if the alphabets are printed around the joystick device, the on-screen keyboard component would be unnecessary.

[0038] The on-screen keyboard area can take a variety of shapes, including but not limited to circle, square, oval and polygon with any number of sides. The visual representation is typically, but not limited to, a two-dimensional plane figure.

[0039] The on-screen keyboard **130** may be enhanced by, or even replaced with, a set of compass point letters, which are 'A', 'H', 'N' and 'U'. Compass point letters can be placed in a separate compass area on screen as shown in **FIG. 4A**. They can also be placed around the word selection list as shown in **FIG. 4B**. These compass pointer letters can also be placed in an interactive pointer/cursor on screen or even around the joystick device **110**.

[0040] The letters in the on-screen keyboard **130** can be arranged in any order or orientation. In the preferred layout as shown in **FIG. 2**, all letters have their bottoms towards the center of the ring. In an alternative layout, all letters may be upright. In the preferred layout as shown in **FIG. 2**, the letters are ordered alphabetically. In an alternative layout, the letters may follow the Dvorak order. In the preferred layout as shown in **FIG. 2**, the letters start at the 12 o'clock position. In an alternative layout, the letters may start at the 9 o'clock location. Alternatively, the letters may have a moving starting position in a rotating keyboard in an embodiment, for example, where the input device is a type of wheel. In the preferred layout as shown in **FIG. 2**, the letters are placed clockwise in the character ring. In an alternate layout, the letters may be placed counterclockwise. In the preferred embodiment as shown in **FIG. 2**, letters occupy different amount of radians depending upon their frequency of use in the language, giving more frequent letters a larger target area.

[0041] Likewise, the digits can be arranged in any order or orientation. In the preferred embodiment as shown in **FIG. 3**, the digits would be located adjacent to the series of letters assigned to the corresponding digit keys on a telephone keypad.

[0042] The on-screen keyboard **130** may include letters of a primary input language, letters of alternate input languages (and/or accented letters), digits, and punctuation symbols. The keyboard may also include character components for pictographic languages, diacritics and other "zero-width" characters that attach to preceding characters. The keyboard may further include tone marks, bi-directional characters, functions indicated by a word or symbol, and symbolic representation of a set of characters such as "Smart Punctuation" as described below.

[0043] The preferred primary text input keyboard as shown in **FIG. 3** includes unaccented letters which form an outer ring, digits which form an inner ring, and a symbol or an indicator between the letters "z" and "a", called "Smart Punctuation", which intuitively determines which punctuation is most appropriate based on the word context.

[0044] There may be auditory and/or visual feedback on each joystick movement or button press. For example, as soon as the joystick direction is registered, a solid or gradient-fill pie wedge shape could appear on the keyboard, centered on the current direction of tilt. Further, the width of that pie wedge could narrow in proportion to the tilt of the joystick towards the perimeter. The pie wedge could remain momentarily after the joystick is returned to its center/resting position. The pie wedge provides a visual cue that the tilt of the joystick was registered and reinforces the notion that each action represents a range of possible letters. **FIG. 5** depicts a visual feedback for a joystick movement. The solid pie wedge **502** on the keyboard **302** shows the current direction of the joystick and the range of letters in that direction.

[0045] Referring back to **FIG. 2**, the text display area **210** includes a word choice list region **224** and a message area **220**. The word choice list is a list of words that the system predicts as likely candidates based on the characters entered by ambiguous directional input.

[0046] The most likely word is a default word. The user can either accept the default word with one action, or select an alternate word with a combination of actions.

[0047] The exact spelling sequence of exact characters coincidentally selected by the user is also displayed. Preferably, the spelling sequence is displayed in a separate area above or below the word choice list. Alternatively, it may be displayed as an entry in the word choice list, typically the first line or the last line. In **FIG. 2**, the exact spelling sequence **222** is displayed above the word choice list **224**.

[0048] The last letter entered is also indicated both on the on-screen keyboard and in the exact spell sequence, by some method including but not limited to font change, color change, reverse video or alternate background color, underline, bold face or italics, and outline. Example of outline can be a box or a circle.

[0049] All the words on the word choice list, other than the exact spelling sequence at the time when the exact spelling sequence is displayed as the first or last entry, are ordered by a combination of the shortest calculated distances between the joystick entry sequence and each letter in each word and the recency of use and/or the frequency of use within the given language.

[0050] The directional input system **100** implements a method whereby the user can select a specific word from the word choice list. Preferably, the method is consistent with other applications use of scrolling methods and selection button. The system also includes a means of selecting the exact spelling sequence as well as any predicted words. In one preferred embodiment, the system may include a next button and a previous button, with which the user can navigate forward and backward through the word choice list.

[0051] Alternatively, the directional input system **100** may include a selection mode switch button. When the selection mode switch button is pressed, the system enters a selection mode and the directional input means can be used to scroll forward and backward through the word choice list.

[0052] In addition, selecting a predicted word using a particular means may replace the exact spelling sequence as